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EXAMINER
NGUYEN, PHU K

ART UNIT	PAPER NUMBER
2628	

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Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary	**Application No.** 10/684,320	**Applicant(s)** APODACA ET AL.	
	Examiner Phu K. Nguyen	**Art Unit** 2628	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *24 March 2009*.
2a)☒ This action is **FINAL**. 2b)☐ This action is non-final.
3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1-7,9-36 and 38-44* is/are pending in the application.
  4a) Of the above claim(s) _____ is/are withdrawn from consideration.
5)☐ Claim(s) _____ is/are allowed.
6)☒ Claim(s) *1-7, 9-36, 38-44* is/are rejected.
7)☐ Claim(s) _____ is/are objected to.
8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.
10)☐ The drawing(s) filed on _____ is/are: a)☐ accepted or b)☐ objected to by the Examiner.
  Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
  Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
  a)☐ All b)☐ Some * c)☐ None of:
    1.☐ Certified copies of the priority documents have been received.
    2.☐ Certified copies of the priority documents have been received in Application No. _____.
    3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
  * See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☐ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☐ Information Disclosure Statement(s) (PTO/SB/08)
  Paper No(s)/Mail Date _____.
4) ☐ Interview Summary (PTO-413)
  Paper No(s)/Mail Date. _____ .
5) ☐ Notice of Informal Patent Application
6) ☐ Other: _____.

The following is a quotation of the first paragraph of 35 U.S.C. 112:

> The specification shall contain a written description of the invention, and of the manner and process of making and using it, in such full, clear, concise, and exact terms as to enable any person skilled in the art to which it pertains, or with which it is most nearly connected, to make and use the same and shall set forth the best mode contemplated by the inventor of carrying out his invention.

Claim 28 is rejected under 35 U.S.C. 112, first paragraph, as failing to comply with the written description requirement. The claim(s) contains subject matter which was not described in the specification in such a way as to reasonably convey to one skilled in the relevant art that the inventor(s), at the time the application was filed, had possession of the claimed invention. The claimed “frame of film”.is not described in the original Specification.

Claim 38 is objected to because of the following informalities: It depends on the canceled claim 37. Appropriate correction is required.

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

Claims 1-7, 9-36, 38-44 are rejected under 35 U.S.C. 103(a) as being unpatentable over Jenkins (6,028,608) in view of Cook et al (5,025,400).

As per claim 1, Jenkins teaches the claimed “method for computer rendering an image,” comprising:

“storing a plurality of different representations of an object in a scene to be rendered” (Jenkins, the object is provided in a database with different level-of-details; column 35, lines 24-36);

“selecting a plurality of sample locations” (Jenkins, column 26, lines 25-44; column 35, lines 18-30);

“associating with each of said sample locations one of said plurality of different representations” (Jenkins, column 35, lines 39-43);

“computing an image contribution at each of said sample locations based on the associated one of said plurality of different representations” (Jenkins, column 35, lines 15-24; column 36, lines 25-55); and

“combining said image contributions computed at each of said sample locations to form the image” (Jenkins, column 35, lines 15-24; column 36, lines 25-55). It is noted that Jenkins does not explicitly teach that the sample locations are “within an area of a pixel" and “said sample locations are pseudo-randomly distributed within said area of said pixel” as claimed. However, Cooks teaches that the “sampling within an area of a pixel” (or sub-sampling) and “said sample locations are pseudo-randomly distributed within said area of said pixel” are well known in the art (Cooks, column 4, lines 47-50; column 5, lines 23-27). Thus, it would have been obvious in view of the sub-sampling teaching of Cooks to configure Jenkins’ samples of object in a database with different level-of-details to sampling within an area of a pixels or sub-sampling to determine the final result of the pixel value. The purpose of “sampling within a pixel area” or sub-sampling is improving the gray-level representation of a pixel or the accuracy of pixel representation. The increasing of accuracy in pixel representation is just a trade-off between the quality of the displayed image and the processing time.

RESPONSE TO APPLICANT’S ARGUMENTS:

Applicant’s arguments filed March 24, 2009 have been fully considered but they are not deemed to be persuasive.

Applicant argues that since Jenkins' sampling locations are carefully selected, it can not be combined with Cook’s pseudo-random sampling technique. However, Jenkins's sampling location means the location for the pixel which is equivalent to the claimed “area of said pixel”, while the Cook’s pseudo-random sampling is applied in sub-sampling within an area of the selected pixel (Cooks, column 4, lines 47-50, column 5, lines 5-7) as claimed. In other words, Cook's pseudo-random sub-sampling is used within the Jenkins’ pixel area regardless whether the pixel area is randomly selected or not.

Claim 2 adds into claim 1 “each of said plurality of different representations of an object comprises a set of geometric primitives” (Jenkins, graphic primitive such as polygons; column 58, line 63, column 59, lines 24-25; Cooks, column 3, lines 47-59).

Claim 3 adds into claim 2 “a plurality of said sets of geometric primitives are of different types” (Jenkins, different types of polygons; column 59, lines 24-25).

Claim 4 adds into claim 3 “said sets of geometric primitives are bound with differing rendering attributes” (Jenkins, primitive descriptions such as color, size, … column 61, lines 58-60).

Claim 5 adds into claim 1 “a first of said different object representations has a first topology and a second of said different object representations has a second topology different from said first topology” (Jerkins, Level-of-details in descriptions of the primitive polygons represents the displayed object; column 22, lines 45-65).

Claim 6 adds into claim 1 “two or more of said plurality of different representations correspond to different level of detail representations” (Jerkins, Level-of-details in descriptions of the primitive polygons represents the displayed object; column 22, lines 45-65).

Claim 7 adds into claim 2 “a different level of detail representation is represented by each of said sets of geometric primitives” (Jerkins, column 35, lines 24-36).

Claim 9 adds into claim 1 “each of said plurality of different representations is pseudo-randomly associated with one of said sample locations” (Cooks, column 5, lines 23-27).

Claim 10 adds into claim 1 “the probability that each of said plurity of different representations is pseudorandomly associated with a particular one of said sample locations varies responsive to image based selection criteria” (Cooks, column 5, lines 5-27; column 7, lines 17-31).

Claim 11 adds into claim 1 “defining an image based selection criteria for said object in said scene; defining overlapping ranges of the selection criteria for which alternative ones of said plurality of different representations of the object may be utilized; defining, in said overlapping ranges of the selection criteria, transition functions that prescribe the importance of said alternative representations as a function of the selection criteria; and wherein each of said plurality of different representations is associated with said sample locations with probability proportional to said importance of said different representations" (Cooks, column 5, line 5 to column 6, line 21; and column 7, lines 17-58).

Claims 12-14, and 16-17 adds into claim 11 the pseudo-random distribution of the sampling pattern which would have been obvious in view of Cooks pseudo-random sampling (official notice; also see Applicant's disclosure, column 3, lines 3-9).

Claim 15 adds into claim 1 "establishing partitions of a range of a random variable, each of said partitions associated with one of said different representations of said object; determining a value of said random variable for each of said sample locations; and wherein associating with each of said sample locations one of said plurality of different representations comprises: associating each of said sample locations with one of said plurality of different representations based on the one of said partitions in which said value of said random variable associated with said sample location falls" (Cooks, column 5, line 5 to column 6, line 21; and column 7, lines 17-58).

Claim 40 adds into claim 1 the sampling in a first and second representations of the object which Jerkins teaches in his database with different level-of-details (column 35, lines 24-36).

Claims 41-44 add into claim 40 the details of object representations in different LOD which would have been obvious in view of Jerkins' LOD in database (official notice, column 35, lines 15-36; column 36, line 25 to column 37, line 28)

Claim 28 claims "a frame of film" comprising the image formed by method of claim 1, which is a product by the process of claim 1 (Jenkins, figure 8).

Claims 18-27, and 29-39 claim a memory and an apparatus respectively based on the method of claims 1-17, 40-44; therefore, they are rejected under the same reason.

THIS ACTION IS MADE FINAL. Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the mailing date of this final action.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Phu K. Nguyen whose telephone number is (571) 272 7645. The examiner can normally be reached on M-F 8:00-4:30.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Kee Tung can be reached on (571) 272 7794. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

/Phu K. Nguyen/
Primary Examiner, Art Unit 2628